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IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE

APPLICANT(S) Xiaodong Huang, Andreas Stintz, Kevin Malloy, Guangtian Liu,
Luke Lester and Julian Cheng

PATENT NO.: 6,782,021 B2

ISSUE DATE: August 24, 2004

Certificate

SERIAL NO.: 10/087,408

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of Correction

TITLE: Quantum Dot Vertical Cavity Surface Emitting Laser

ATTY. DKT. NO.: 22920-06460

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, PO Box 1450, Alexandria, VA 22313-1450, on the date shown below:

Dated: SEPT. 27, 2004

By: Michael W. Farn

Michael W. Farn, Reg. No. 41,015

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ATTENTION: DECISION AND CERTIFICATE OF CORRECTION
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REQUEST FOR CERTIFICATE OF CORRECTION

SIR:

The following errors, as more fully described below, appear in this patent.

- The Applicant submits that no fee is due for correction of the errors made by the Patent and Trademark Office; OR,
- The errors occurred in good faith. Correction thereof does not involve such changes in the patent as would constitute new matter or would require re-examination. A

Certificate of Correction is requested. Enclosed herewith is payment in the amount of \$100.00 to cover the fee for this Certificate of Correction.

Attached hereto are duplicate Forms PTO-1050, with at least one copy that is suitable for printing.

Applicant kindly requests the following changes:

Title Page,

Item [56], **References Cited**, U.S. PATENT DOCUMENTS, add:

-- 5,608,229 A	03/1997	Mukai et al.	257 /14
5,781,575 A	07/1998	Nilsson	372 /50
5,930,278 A	07/1999	Menigaux	372 /50 --

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These references appeared in Information Disclosure Statements initialed by the Examiner on 02/03/2004 and attached to the Notice of Allowance dated 02/18/2004, copies of which are attached hereto as Exhibit A. All of these errors are typographical errors.

Please send the Certificate to:

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Respectfully submitted,
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UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

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DATED : August 24, 2004

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CERTIFICATE OF CORRECTION

PATENT NO. : 6,782,021 *B2*

DATED : August 24, 2004

INVENTOR(S) : Xiaodong Huang, Andreas Stintz, Kevin Malloy, Guangtian Liu, Luke Lester and Julian Cheng

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Title Page, OTHER PUBLICATIONS (cont.):

Prieto, J.A.; Armelles, G.; Priester, C.; Garcia, J.M.; Gonzalez, L.; and Garcia, R.; *Strain-Induced Optical Anisotropy In Self-Organized Quantum Structures At The E_I Transition*; Applied Physics Letters; Vol. 76, No. 16; April 17, 2000; pp. 2197-2199.

Qiu, Y.; Gogna, P.; Forouhar, S.; Stintz, A.; and Lester, L.F.; *High-Performance InAs Quantum Dot Lasers Near 1.3 μm*; Applied Physics Letters; Vol. 79, Number 22; November 26, 2001; pp. 3570-3572.

Qiu, Y.; Gogna, P.; and Forouhar, S.; *High Temperature Continuous Wave Operation Of InAs Quantum Dot Lasers Near 1.3 μm*; Conference: IEEE Lasers & Electro-Optics Society; LEOS Conference; November 12-16, 2001; pp. 267-268.

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Shernyakov, Yu.M.; Bedarev, D.A.; Kondrat'eva, E.Yu.; Kop'ev, P.S.; Kovsh, A.R.; Maleev, N.A.; Maximov, M.V.; Mikhrin, S.S.; Tsatsul'nikov, A.F.; Ustinov, V.M.; Volovik, B.V.; Zhukov, A.E.; Alferov, Zh.I.; Ledentsov, N.N.; and Bimberg, D.; *1.3μm GaAs-Based Laser Using Quantum Dots Obtained By Activated Spinodal Decomposition*; Electronics Letters; Vol. 35, No. 11; May 27, 1999; pp. 898-900.

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MAILING ADDRESS OF SENDER:

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Varangis, P.M.; Li, H.; Liu, G.T.; Newell, T.C.; Stintz, A.; Fuchs, B.; Malloy, K.J.; and Lester, L.F.; *Low-Threshold Quantum Dot Lasers With 201nm Tuning Range*; Electronics Letters; Vol. 36, No. 18; August 31, 2000.

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Wang, Zhanqiu; Liu, Fengqi; Liang, Jiben; and Xu, Bo; *Self-Assembled InAs/GaAs Quantum Dots And Quantum Dot Laser*; Science in China; Vol. 43, No. 8; August 2000; pp. 861-870.

Wasilewski, Z.R.; Fafard, S.; and McCaffrey J.P.; *Size And Shape Engineering Of Vertically Stacked Self-Assembled Quantum Dots*; Journal Of Crystal Growth; Vol. 201, 202; 1999; pp. 1131-1135.

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Willatzen, M.; Tanaka, T.; Arakawa, Y.; and Singh, J.; *Polarization Dependence Of Optoelectronic Properties In Quantum Dots And Quantum Wires – Consequences Of Valence-Band Mixing*; IEEE Journal of Quantum Electronics; Vol. 30, No. 3; March 1994; pp. 640-653.

Zhukov, A.E.; Kovsh, A.R.; Egorov, A.Yu.; Maleev, N.A., Ustinov, V.M.; Volovik, B.V.; Maksimov, M.V.; Tsatsul'nikov, A.F.; Ledentsov, N.N.; Shernyakov, Yu.M.; Lunev, A.V., Musikhin, Yu.G.; Bert, N.A.; Kop'ev, P.S.; and Alferov, Zh.I.; *Photo And Electroluminescence In The 1.3 μm Wavelength Range From Quantum-Dot Structures Grown On GaAs Substrates*; Semiconductors; Vol. 33, No. 2; February 1999; pp. 153-156.

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Sheet 7 of 7

FORM PTO-1449 (REV. 6-89)		U.S. DEPARTMENT OF COMMERCE Patent and Trademark Office	Attorney's Docket No. 22920-06460	Serial No. 10/087,408
INFORMATION DISCLOSURE CITATION		Applicant Xiaodong Huang et al.		
(Use several sheets if necessary)		Filing Date March 1, 2002	Group Art Unit Unassigned	
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)				
JD JD JD JD JD JD JD JD	80	Varangis, P.M.; Li, H.; Liu, G.T.; Newell, T.C.; Stintz, A.; Fuchs, B.; Malloy, K.J.; and Lester, L.F.; 183 nm Tuning Range In A Grating-Coupled External-Cavity Quantum Dot Laser; IEEE 2000 International Semiconductor Laser Conference; pp. 137-138.		
	81	Wang, R.H.; Stintz, A.; Rotter, T.J.; Malloy, K.J.; and Lester, L.F.; Low Threshold Oxide-Confined InAs Quantum Dash Ridge Waveguide Lasers On InP Substrates; Conference: IEEE Lasers & Electro-Optics Society; LEOS Conference; November 12-16, 2001; pp. 405-406.		
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	85	Wasilewski, Z.R.; Fafard, S.; and McCaffrey J.P.; Size And Shape Engineering Of Vertically Stacked Self-Assembled Quantum Dots; Journal Of Crystal Growth; Vol. 201, 202; 1999; pp. 1131-1135.		
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	87	Zhukov, A.E.; Kovsh, A.R.; Egorov, A.Yu.; Maleev, N.A.; Ustinov, V.M.; Volovik, B.V.; Maksimov, M.V.; Tsatsul'nikov, A.F.; Ledentsov, N.N.; Shernyakov, Yu.M.; Lunev, A.V.; Musikhin, Yu.G.; Bert, N.A.; Kop'ev, P.S.; and Alferov, Zh.I.; Photo And Electroluminescence In The 1.3 μm Wavelength Range From Quantum-Dot Structures Grown On GaAs Substrates; Semiconductors; Vol. 33, No. 2; February 1999; pp. 153-156.		
EXAMINER <i>James Davis</i>		DATE CONSIDERED <i>2/07/04</i>		
EXAMINER: Initial if references considered, whether or not citation is in conformance with MPEP § 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.				

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22920/06460/DOCS/1256916.1



Sheet 6 of 7

FORM PTO-1449 (REV. 6-89)		U.S. DEPARTMENT OF COMMERCE Patent and Trademark Office	Attorney's Docket No. 22920-06460.	Serial No. 10/087,408
INFORMATION DISCLOSURE CITATION		Applicant Xiaodong Huang et al.		
(Use several sheets if necessary)		Filing Date March 1, 2002	Group Art Unit Unassigned	
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)				
JD	67	Park, Gyounwon; Shchekin, Oleg B.; Csutak, Sebastian; Huffaker, Diana L.; and Deppe, Dennis G.; <i>Room-Temperature Continuous-Wave Operation Of A Single-Layered 1.3μm Quantum Dot Laser</i> ; Applied Physics Letters, Vol. 75, No. 21; November 22, 1999; pp. 3267-3269.		
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JD	69	Qiu, Y.; Gogna, P.; Forouhar, S.; Stintz, A.; and Lester, L.F.; <i>High-Performance InAs Quantum Dot Lasers Near 1.3 μm</i> ; Applied Physics Letters; Vol. 79, Number 22; November 26, 2001; pp. 3570-3572.		
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JD	76	Tabuchi, H.; and Ishikawa H.; <i>External Grating Tunable MQW Laser With Wide Tuning Range Of 240nm</i> ; Electronic Letters; Vol. 26, No. 11; May 24, 1990; pp. 742-743.		
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JD	79	Varangis, P.M.; Li, H.; Liu, G.T.; Newell, T.C.; Stintz, A.; Fuchs, B.; Malloy, K.J.; and Lester, L.F.; <i>Low-Threshold Quantum Dot Lasers With 201nm Tuning Range</i> ; Electronics Letters; Vol. 36, No. 18; August 31, 2000		
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OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)				
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EXAMINER	<i>James D. Davis</i>		DATE CONSIDERED	<i>2/03/04</i>
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Complete if Known	
Application No.	10/087,408
Filing Date	March 1, 2002
First Named Inventor	Xiaodong Huang
Art Unit	2828
Examiner Name	James W. Davie
Attorney Docket Number	22920-06460

OTHER REFERENCES – NON-PATENT LITERATURE DOCUMENTS			
Examiner Initials ¹	Cite No. ²	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T ³
JD	8	Park, Gyoungwon et al., "Temperature Dependence of Gain Saturation in Multilevel Quantum Dot Lasers," <i>IEEE Journal of Quantum Electronics</i> , IEEE Inc., New York, U.S., Vol. 36, No. 9, September 2000, pages 1065-1071.	
JD	9	Saito, Hideaki et al., "Controlling polarization of quantum-dot surface-emitting lasers by using structurally anisotropic self-assembled dots," <i>Applied Physics Letters</i> , American Institute of Physics, New York, U.S., Vol. 71, No. 5, August 4, 1997, pages 590-592.	
JD	10	Schur, Richard et al., "Vertical Microcavity Lasers with InGasAs/GaAs Quantum Dots Formed by Spinodal Phase Separation," <i>Japanese Journal of Applied Physics</i> , Tokyo, Japan, Vol. 36, No. 3B, March 15, 1997, pages 357-360.	
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JD	13	PCT International Search Report, International Application No. PCT/US01/31256, May 27, 2003, 7 pages.	
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Application No.	10/087,408
Filing Date	March 1, 2002
First Named Inventor	Xiaodong Huang
Art Unit	2828
Examiner Name	James W. Davie

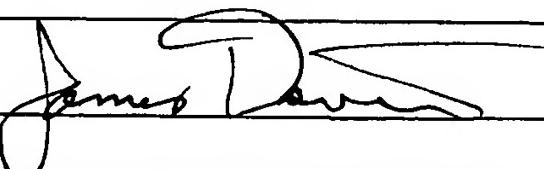
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JD	1	US-5,608,229 A	03-04-1997	Mukai et al.

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JD				T ⁶

OTHER REFERENCES – NON-PATENT LITERATURE DOCUMENTS				
Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published		T ⁶
JD	2	Komori, Kazuhiro et al., "Noise Study of Low-Dimensional Quantum-Well Semiconductor Laser Amplifiers," <i>IEEE Journal of Quantum Electronics</i> , IEEE Inc., New York, US, Vol. 28, No. 9, September 1, 1992, pages 1894-1900.		
JD	3	Saito, Hideaki et al., "Room-temperature lasing operation of a Quantum-dot vertical-cavity surface-emitting laser," <i>Applied Physics Letters</i> , American Institute of Physics, New York, US, Vol. 69, No. 21, November 18, 1996, pages 3140-3142.		
JD	4	Utzmeier, T. et al., "Growth and characterization of self-organized InSb quantum dots and quantum dashes," <i>Journal of Crystal Growth</i> , North-Holland Publishing Co., Amsterdam, The Netherlands, Vol. 175-176, May 1, 1997, pages 725-729.		R
JD	5	PCT International Search Report, International Application No. PCT/US01/29561, June 6, 2003, 7 pages.		E

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UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 6,782,021

DATED : August 24, 2004

INVENTOR(S) : Xiaodong Huang, Andreas Stintz, Kevin Malloy, Guangtian Liu, Luke Lester and Julian Cheng

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Title Page,

Item [56], References Cited, U.S. PATENT DOCUMENTS, add:

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Title Page, OTHER PUBLICATIONS (cont.):

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